Worst Performing Circuit Inspections:

Notes: This summary for the circuit(s) inspected represents typical observations noted by Staff engineers during the field inspection and DOES NOT represent all of the problems or potential problems that may exist on the circuit(s). In many cases, there were portions of the circuit(s) that were not inspected at all. No effort was made to perform a thorough, detailed inspection as may need to be done by the utility.

Staff Observations – Monday June 13, 2005

ComEd Chicago Region
Staff: John Stutsman
ComEd: Victor (Vic) Hernandez; Mary Vincent
Worst performing 2004 Distribution Circuits Inspected on 6-13-2005:
Z15077
Z4337
X5333

Circuit Z15077

See page J-14 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Observations on Circuit Z15077

Drawing Z15077 1 of 5

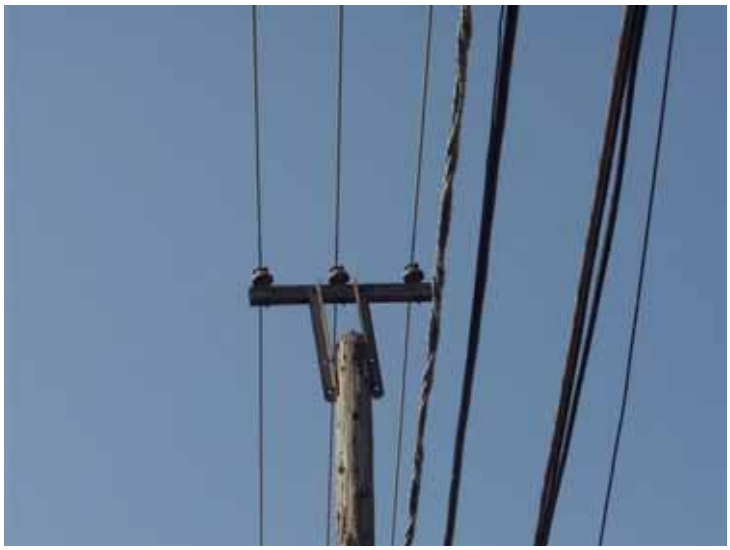
Ragged pole tops – 2+
Primary close to tree – 2+

Drawing Z15077 2 of 5

Ragged pole tops – 5+
ground wire cover broken

P6130008 – shoes on center phase hanging down to xfmr tap and very close to touching tap

ComEd personnel present with Staff called in to have shoes removed.



P6130009 – Loose pole top extension.

P6130010 & 11 & 12 – Tree close to Primary and pole top. Branch from tree is curled around primary.

P6130013 – field phase of primary into tree.

Drawing Z15077 3 of 5

Tree close – 1 location.
Primary into tree at lightning arrestor – 1 location
Field phase into tree – 1 location.

Z15077 Drawing 4 of 5

Field phase into tree – 1 location.

Z15077 Drawing 5 of 5
Field phase into trees – 2 locations

Circuit Z4337
See page J-16 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Z4337 – Drawing 1 of 2

P6130021 – Pole Top Extension appears loose – looks like a loose bolt.

P6130022 – Customer came out during inspection and told Staff that the Pole made "cracking sounds" near the base when the wind blows. Several questionable poles as well as ragged pole tops were noted by Staff North of this position in alley. ComEd personnel present with Staff called this in to their respective offices.

Additional Comments on Drawing Z4337 1 of 2
Line hose seen on primary
Loose bottom arm
Uncovered ground wire [molding is missing]

Questionable poles and ragged pole tops seen in various locations.

Drawing Z4337 2 of 2

Pole mount transformer appeared to have been hot enough in the past to bake the paint off of the outside. -- 1
Ground wire molding missing – Several occasions
Broken guy wire – 1
Guy guard broken -- 1
Animal guards missing – 1
Slack Guy wire – 1
Old poles – Several Occasions
Ragged tops – Several Occasions

At many locations it was noted that new poles were laying on the ground in preparation, no doubt, to replacing many of the questionable poles observed.

At one location a crew was observed installing new poles.

Circuit X5333
See page J-29 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing X5333 1 of 3
Circuit is located underground and could not be observed.

Drawing X5333 2 of 3
Close trees – 1 occasion
Questionable poles – 4 occasions
Dead branches located above Primary – 1 occasion
Broken ground molding exposing ground wire – 2 occasions

Drawing X5333 3 of 3
Circuit is located underground and could not be observed.

Staff Observations – Tuesday June 14, 2005

ComEd Southern Region
Staff: John Stutsman
ComEd: Victor (Vic) Hernandez; Mary Vincent
2004 worst performing Distribution Circuits Inspected:
G583 – Calumet City
G657 – South Holland
K5772 -- Kankakee

Circuit G583
See page J-73 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing G583 1 of 3

P6140032 – Broken cross arm support. Pole top also ragged.

P6140033 – Exposed ground wire – cover molding is broken off & and ground wire is pulled away from pole

Top of pole appears questionable -- Located about a block east from this pole another questionable pole was seen – “iffy” but may still be sound.

Drawing G583 2 of 3

Seen in various locations:
- Missing guy guard – 3
- Questionable poles – various
- Vine growing up pole
- Ground wire cover molding missing or broken off near bottom of pole -- 2

P6140036 – broken insulator and pole top pin coming off pole, bottom bolt nearly out.

P6140038 – Blown Lightning Arrestor

P6140039 – Silver Maple directly below transformer & primary and will be source of future problems/expense

Drawing G583 3 of 3

Seen in various locations:
- Vines on guy guard but appeared dead
- Ground wire exposed / ground molding missing/damaged – 2
- Guy guard missing – 2
- Silver Maples growing under primary – various locations
- Vines and Silver Maples growing in proximity of primary
- Pole leaning possibly due to broken guy wire.

Circuit G657

See page J-69 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing G657 1 of 6
Drawing G657 2 of 6

- Vines growing on pole
- Distribution transformer that had paint that appeared burnt off from running hot in the past.

Drawing G657 3 of 6

- Vines growing on poles --2
- Pole leaning heavily

Drawing G657 4 of 6

P6140043 & P6140044 – pole looks questionable. 2 damaged down guys and guy guards are missing.

Drawing G657 5 of 6

Heavily leaning pole.
Saw pole being replaced by work crews at another location.

Drawing G657 6 of 6

Heavily leaning poles – 2
Customer came outside his home on 172nd Street and talked to Staff about quality of tree trimming – stated that he wasn't contacted by the tree trimmers and he's home most of the time. Customer was upset that his Magnolia tree in his back yard was heavily trimmed to the point that he would have preferred the whole tree had been taken out.

Circuit K5772

See page J-71 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing K5772 1 of 8

Seen in various locations:
Missing ground cover/molding at bottom of poles – 3

Ragged poles – various

Drawing K5772 2 of 8
Seen in various locations:
Missing ground cover at bottom of pole

Drawing K5772 3 of 8
Seen in various locations:
Ragged poles in various locations
Blown lightning arrestors in 2 locations

Drawing K5772 4 of 8
Blown lightning arrestor in 1 location

Drawing K5772 5 of 8
Drawing K5772 6 of 8

P6140047 – nut missing on top bolt

Drawing K5772 7 of 8
Seen in two locations:
Missing guy guard in two locations

Drawing K5772 8 of 8

P6140050 & P6140051 – cracking of pole near top.

Staff Observations – Monday, June 20, 2005

ComEd Northwest Region
Staff: John Stutsman
ComEd: Butch Burgett; Betty Gallagher
Worst performing 2004 Distribution Circuits Inspected:
R8703 – New Millford
E2106 – Grafton township
E4001 -- Cary

Circuit R8703 – New Millford

See page J-91 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing R8703 1 of 9

P6200004 – Ground cover/molding missing at bottom of pole and ground rod out of ground

Drawing R8703 2 of 9

Seen in various locations:
Vines on poles at multiple locations

P6200008 -- Vine growing up inside molding and vine is on transformer. Ground guard bottom 4 feet is missing & exposing ground wire.

P62000010 – Vine growing on pole

P62000012 -- vines growing on a pole

P62000014 – dead vines on a pole – sign of previous problems in the area.

Drawing R8703 3 of 9
Drawing R8703 4 of 9
Drawing R8703 5 of 9

Seen in various locations:
Grounding wires on side of poles exposed by missing cover/molding near bottom of pole – 2 occasions
Vines growing on poles – 2 occasions.

Drawing R8703 6 of 9
Drawing R8703 7 of 9

Seen in various locations:
Ragged pole tops.

P6200006 -- Grounding wire down side of pole broken. Part of molding is missing.

Drawing R8703 8 of 9
Drawing R8703 9 of 9

Guy guard missing at 1 location.

Circuit E2106 – Grafton township
See page J-93 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing E2106 1 of 10

Vegetation appeared close but not touching primary at 1 location

Drawing E2106 2 of 10

Seen in various locations:

Missing Covers/moldings on ground wire near pole bottoms.
Missing Guy guards
Trees close to primary in 2 locations

Drawing E2106 3 of 10

Seen in various locations:
Trees [silver maples] close to primary
Questionable/ragged looking poles

Drawing E2106 4 of 10

Guy wire is very loose.

Drawing E2106 5 of 10
Drawing E2106 6 of 10
Drawing E2106 7 of 10
Drawing E2106 8 of 10
Drawing E2106 9 of 10
Drawing E2106 10 of 10

Missing guy guard in 2 locations.
Questionable poles noted in 3 locations.

Circuit E4001 -- Cary
See page J-92 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Drawing E4001 1 of 5

Seen in various locations:
Missing ground cover/molding near bottom of pole

Drawing E4001 2 of 5
Drawing E4001 3 of 5
Drawing E4001 4 of 5
Drawing E4001 5 of 5

Staff Observations – Tuesday, June 21, 2005

ComEd Northeast Region
Staff: John Stutsman
ComEd: Butch Burgett; Betty Gallagher
Worst performing 2004 Distribution Circuits Inspected:
W659X -- Itasca
C0913 – Long Grove
C7225 -- Glenview

Circuit W659X Itasca
See page J-42 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Dwng W659X 1 of 2
Dwng W659X 2 of 2

Circuit C0913 – Long Grove
See page J-43 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Dwng C0913 1 of 7
Dwng C0913 2 of 7
Dwng C0913 3 of 7

Seen in various locations:
Trees close to primary

P6210025 – tree into primary with brown/burning marks at tips of branches

P6210026 – ComEd look out card left on side of pole & slack down guy.

Dwng C0913 2 of 7

Seen in various locations:
Trees close to primary

P6210027 – “Electro-trimming” seen in trees. Trees into primary.

P6210028 – field side phase of tap is energized and is fused on this customer owned line. The entire length of this customer circuit is heavily into the trees and vines for about 1,000 feet. ComEd comments that the customer is responsible for trimming the customer owned tap. In Staff's opinion the most important thing to note about this tap is that it is fused.

Dwng C0913 5 of 7

Seen in various locations:
Questionable/Ragged poles
Trees close or into primary.

Dwng C0913 6 of 7
Dwng C0913 7 of 7

Circuit C7225 -- Glenview

See page J-44 of the Report for a listing of causes of interruptions on this Circuit and the work done on this Circuit.

Dwng C7225 1 of 3
Dwng C7225 2 of 3

Seen in various locations:
Ground molding missing on pole exposing ground wire near base of pole.
Trees close to primary
Questionable poles

Dwng C7225 3 of 3

Seen in various locations:
Questionable or shell rot poles
Ground molding hanging off of bottom of cross-arm
Un-fused single phase taps.

Substation Inspections for Monday & Tuesday, June 27-28, 2005:

Notes: This summary for the substation(s) inspected represents typical observations noted by Staff engineers during the field inspection and DOES NOT represent all of the problems or potential problems that may exist in the substation(s). In many cases, there were portions of the substation(s) that were not inspected at all. No effort was made to perform a thorough, detailed inspection as may need to be done by the utility.

Field Report – Monday, June 27, 2005

Staff: John Stutsman
ComEd: Keith Frost; Betty Gallagher
Substations Inspected:
TSS70 Bradley
TDC 446 Lansing
TSS150 Calumet
TSS38 Humboldt Park
TDC550 Clearing

Substation TSS70 Bradley

Some weeds in yard and around equipment and some oil spills.
Rust observed on some equipment
Oil levels on some equipment looked on the high side.
Some oil gauges are difficult to read.

P6270003 – weeds in yard

P6270004 – TR 76 Xfmr Tap at 10L w/range from nR to 12L. TR 77, 78, 79, 73 were similar.

P6270005 -- Hydran at TR 76 with some oil leakage or spillage

P6270008 – Fresh oil on ground at TR 77

Bushing oil leak observed at TR 78

P6270012 – TR 74 old oil leaks below fins has not been cleaned up.

TR 71 Active oil leaks observed on two sides of Transformer

TR 71 Disconnected Fan on cooling fins because blade was hitting shroud

Wildlife protection observed on equipment

Substation TDC446 Lansing

Cntl Bldg looks pretty clean. Cntl hse looks good – very compact
On one tower just outside the substation it was noted that barbed wire was hanging down.

P6270025 – Vegetation within Substation. There was some trash in this area but ComEd personnel with Staff picked it up as they came into the Substation.

P6270026 – FDR4674 Bus Disc – with rust & bad paint job

Some unusual work practices for equipment grounds from buss work to cable shield of distribution cables were observed.

P6270031 – Dirt visible on cooling fins on transformer XFMR71

P6270032 – Oil on ground below cooling fins of XFMR71

XFMR71 LTC tap limits are not evenly distributed around neutral as would be typically expected. XFMR74 was similar.

Active leak around flanges of XFMR74 observed

P6270036 – Leak on other side of XFMR 74.Noted ground cable partly out of ground

Substation TSS150 Calumet

No single line ("SL") diagram displayed but there is sort of a SL on panels
Compartments 41 & 42 are open.
Also noted A phase oil leak at Tank P.U. 3.1 – ComEd noted that these tanks are out of service

Saw a lot of cases of oil tank levels very near or at full on breakers.
TR 74 & 78 OCB A & C phase tank pegged full and oil on ground.
BT 3.4 OCB B phase bushing pegged “H” & tanks rusty
BT 3.4 OCB All tanks oil levels pegged full
XFMR78 oil leak from cooling fins

P6270040 – XFMR78 oil leak on ground from secondary cable

P6270041 – XFMR 78 tripping hazard.

P6270043 – XFMR76 Trash around XFMR and oil stain.

XFMR76 rust observed on the outside

XFMR 76 oil leak at top of cooling fins and body of XFMR

P6270046 – Ground wire laying on ground near L94402 Breaker

P6270048 – Ground wires laying on/across top of ground

P6270049 – C phase bushing of Oil Circuit Breaker (“OCB”) L0708 oil level is high

P6270050 – A phase oil level in tank OCB L0707 plug/float up against top of tank oil gauge

P6270051 – Oil leak at B&C phase tanks of BT2.3

P6270053 – P.U. 33.34 C phase Tank bushing oil on “L” and oil leak visible == ComEd personnel noted that it is being decommissioned and is not currently in service

P6270055 – C phase bushing of L15001 OCB level on H

Weeds were observed growing in substation yard

P6270057 – TR 72&76 OCB C phase tank active oil leak

P6270059 – TR 72&76 OCB C phase anchor clamp off – all off on opposite side

XFMR 72&76 OCB C phase rust on tank

P6270061 – XFMR 71X LTC – noted operation at extreme limit.

P6270062 – XFMR 71X oil leak under fins

P6270063 – XFMR 71Y LTC – note operation at extreme limit

P6270064 – XFMR 72X LTC

P6270065 – XFMR72 missing fan has been disconnected and is out for repairs

P6270066 – XFMR72 oil on ground

P6270067 – XFMR72Y LTC shows that it has operated in both extreme positions

P6270068 – XFMR73X LTC shows that it has operated in one extreme position – XFMR also missing a fan that ComEd reports was removed for replacement

P6270069 – XFMR73Y LTC

P6270070 – Xfmr74X LTC

P6270071 – XFMR74Y LTC

Substation TSS38 Humboldt Park

Oil leaks at 138KV pot head for XFMR74
Weeds & trash in substation yard

P6270075 – XFMR LTC

P6270076 & P6270077 XFMR73 oil leaks – note material placed down to absorb the oil for easier clean-up later

P6270078 – XFMR73 LTC -- Xfmr72 LTC & XFMR71 LTC looked similar

P6270081 – XFMR42 LTC

XFMR41 [12kv-4kv] LTC, XFMR43 LTC, XFMR44 LTC appeared centered about neutral tap and within extreme limits

Substation TDC550 Clearing

P6270084 – XFMR73: Oil coming out of vent – ComEd commented this was due to high oil levels and that the LTC had a leaking headboard.


P6270085 & P6270086 -- XFMR73: oil from overflow onto cntl cabinet and onto ground and stairs – Staff was not able to check LTC position indicator without opening cabinet door because front was covered by oil obscuring view glass on door

P6270087 XFMR73: cylinder held by rope and not chain

Rust was visible on outside of XFMR72

P6270090 – XFMR72 LTC range 13L to 16H

Oil on foundation of XFMR72

P6270093 – XFMR71 LTC – bad paint job on XFMR – old oil spill was also observed at XFMR71.


P6270096 – Ground cable laying on top of ground – trash and weeds in yard.

P6270098 – Ground wire coiled up outside to go inside D5004 switchgear

P6270099 – Trash on XFMR cooling fan.

Field Report – Tuesday, June 28, 2005

Staff: John Stutsman
ComEd: Keith Frost; John Parise
Substations Inspected:

TSS42 Round Lake
TSS 152 Busse
TDC 581 Frontenac
TDC 557 Butterfield
DCW 384 Butterfield
TDC 559 Woodridge
TSS 103 Lisle

Substation TSS42 Round Lake

P6280103 – Equipment & debris in yard and along fence – as well as equipment stored for later use.

P6280104 – Arm on oil level gauge missing on POT & can't determine fluid level – ComEd personnel at substation said that POT is on W.O. order to replace on next PEG

Bad paint job on some equipment was observed.

P6280106 – XFMR77 LTC – looks like operation is symmetrical about neutral.

P6280107 – Bird nest in equipment [center of photo] and rust on equipment.

P6280108 – XFMR72 LTC shows operation at extreme lower limit. XFMR71 LTC was similar.

P6280111 – 12KV Cap bank #2 ground [center of picture]

P6280114 – XFMR76 LTC

P6280115 – example of the large amount of animal protection installed at Round Lake

P6280116 – New design squirrel guards that rotate [balls on line in center]

Substation TSS152 Busse

Weeds seen along fence.

P6280122 – XFMR71 LTC – noted some oil on XFMR pad and in rock around XFMR

P6280123 – XFMR72 LTC – Bushing oil on XFMR looked high and noted some oil around base

P6280124 – XFMR73 LTC

P6280125 – XFMR74 LTC – noted that XFMR had new radiators


P6280126 – Two+ Monk Parakeet's and nest on transmission tower located in substation

P6280128 – Tower grounds [lots of them] tied into station ground mat

SCADA single line on panel in relay house

Substation TDC581 Frontenac

Alarm switch on relay house door observed set to work
Single line drawing on wall

P6280133 – XFMR71 oil leak on fins – note absorbent material placed to capture leaking fluids making for easier cleanup later.

P6280134 – XFMR71 oil leak on fins

P6280135 – XFMR71 LTC

P6280136 – XFMR72 LTC

P6280137 – XFMR73 LTC


P6280138 – XFMR73 possible slow leak from top flange and down side

P6280139 – XFMR74 LTC

P6280140 – L14310 OCG 138KV BREAKER – B phase bushing oil low – ComEd personnel know about it and are waiting for the next planned outage to correct

P6280141 – L14310 OCG 138KV BREAKER – C phase bushing oil level gauge glass broken – ComEd personnel know about it and are waiting for the next planned outage to correct

Substation TDC 557 Butterfield

Single line in relay house & Log book observed

P6280145 – XFMR71 LTC

P6280146 – XFMR72 LTC


P6280147 – New gravel being put in place around fence – noted that ground in station has “smoothed out” in many places.

Substation DCW 384 Butterfield

P6280148 – While at Butterfield looked at a new substation design which DCW384 Butterfield is the first[located just outside the fencing of TDC557 Butterfield]

DCW384 is called “DC in a Box” and is referred to the ComEd engineer who developed it as “Thinking Inside the Box”

It was an impressive & innovative design concept

P6280150 XFMR in larger box on left of picture followed by three 1phase regulators to the right of the XFMR

Substation TDC 559 Woodridge

P6280156 – XFMR72 LTC – also noted that C phase bushing oil level was high

P6280157 – XFMR71 LTC

P6280158 – paint on top of XFMR B phase bushing covering glass indicator for oil level – ComEd noted that the oil level can still be seen and the glass was only partially covered by paint.

P6280160 – phone line loosely draped across poles and along substation fencing

P6280162 – birds nest in framework for light in substation

P6280163 – guy wire that looks close to primary

P6280165 – broken/missing cover/molding on ground wire on pole. Usually see this in rural areas where tractors may have hit the pole and knocked off the cover but inside a substation and next to the fence not sure how this would occur

Substation TSS103 Lisle

Single line in relay house
Station alarm on door was observed to be set properly

P6280170 – XFMR71 LTC – some rust on equipment – some oil leakage at this XFMR

P6280171 – 138KV BT 1-2 OCB A phase bushing oil near/at H – glass cracked

P6280172 – XFMR72 LTC – stop at 16 lower

P6280173 – XFMR77 lose tape on insulator

P6280174 – XFMR77 tape cover top part of window for oil level – ComEd noted that the oil level can still be seen.

P6280175 – XFMR77 LTC

P6280176 – XFMR73 LTC – stop at 16 lower

P6280177 – XFMR74 LTC

P6280178 – XFMR78 2 phases on low side can't read oil level from ground without binoculars

P6280179 – XFMR78 LTC -- XFMR 79 LTC similar

P6280180 – 34KV10342 – oil leak on tank

P6280181 – Bus 2 pots c phase cracked indicator window

P6280185 – 345KV BT1-2 – A phase bushing looks high
B phase bushing looks high on other side
C phase bushing looks high on other side

ComEd personnel know about bushing leaks on 345 OCB Bushings A phase and C phase